IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: Fumio Suzuki

File No.: 180640

Art Unit: 2838

Filed: 14 APR 2001

Examiner: LUK

Application No.: 09/833,884

For: CHARGING APPARATUS, CHARGING METHOD, CHARGING SYSTEM, AND RECORDING MEDIUM ONTO WHICH IS RECORDED A CHARGING METHOD

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO OFFICE ACTION

Dear Sir:

In response to the Office Action of May 23, 2003 Applicant submits the following remarks and amendments. In the Office Action, the Examiner objected to claims 70-85 as being of improper dependent form. Applicant has amended these claims to overcome the objection.

The Examiner rejected claims 1, 8 and 9 as being anticipated by Matsuda. Applicant has amended claim 1 to include the limitation of an input means for inputting information at least about the respective secondary cell to be charged. None of the cited references teach or suggest inputting information about the secondary cell to be charged or the use of a charging processing operation program. Therefore, claims 1, 8 and 9, and all claims dependant thereon, are patentable over the cited art.

The Examiner rejected claims 62 and 63 as being anticipated by Pan. Applicant respectfully disagrees with the Examiner. Pan neither suggests nor discloses the use of an internal power source of the PC as a power source of the charger. Although Fig. 1 of Pan shows a mobile handset connected to a keyboard, the patent does not disclose the power supply used for charging the

handset. Claims 62 and 63 have been amended to clarify this difference from the prior art. Therefore, these claims are patentable over the cited art.

The Examiner rejected claims 2, 3, 10, 12 and 16 as being unpatentable over Matsuda in combination with Toyosato. The Toyosato reference shows a battery charger in a power converter connected to an internal battery or external battery, but it does not disclose that the battery charger is connected to an internal power source of the computer. There is no teaching or suggestion in Toyosato, or any other cited reference, as to where the source of power is derived, much less a teaching that it is to come from the internal power supply of the computer. The reference also does not show that the battery charger is controlled by a charging processing program as claimed.

The Examiner has rejected claims 4, 5 and 7 as being unpatentable over Matsuda in combination with Toyosato and Brotto, et al. Claim 5 has been cancelled. Claims 4 and 7 are dependent from claim 1 and are patentable for the reasons stated above.

The Examiner has rejected claims 6 and 13 as being patentable over Matsuda in combination with Toyosato and Nelson, et al. Applicant has cancelled claim 6. Claim 13 is patentable over the cited references for the reasons stated above.

The Examiner has rejected claims 15 and 17 as being unpatentable over Matsuda in combination with Toyosato, Nelson and Anderson. Claim 17 has been cancelled. Claim 15 is dependant from claim 1 and is, therefore, patentable over the cited art for the reasons stated above.

The Examiner has rejected claims 18-20. Applicant has cancelled these claims.

The Examiner rejected claim 23 as being unpatentable over Matsuda in combination with Toyosato and Murakawa. Applicant respectfully disagrees with the Examiner. This claim is patentable for the reasons discussed above. In addition, Murakawa only relates to an image retrieving apparatus and is not related to a charging device for charging a secondary cell. Thus it does not suggest a charger in a way to charge secondary cells.

The Examiner rejected claims 24, 25 and 33 as being unpatentable over Matsuda in combination with Toyosato and Murakawa in further combination with Singleton. Applicant respectfully disagrees. These claims are patentable for the reasons stated above. Also, Singleton teaches an acquisition mobile station
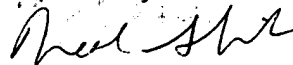
power source capacity level and does not teach or suggest a charger or charging process for secondary cells. Singleton shows technology how to get current information about a mobile station but never discloses how to charge a secondary cell with a charger which is connected to an internal power source of a PC as the power source of the charger. It also does not teach or suggest a charging processing operation program with displaying charging information about a secondary cell to be charged on the display of the PC.

The Examiner rejected claim 28 as being unpatentable over Matsuda in combination with Toyosato, Murakawa, Singleton and Anderson. Applicant respectfully disagrees with the Examiner. As discussed above, none of the references teach that the charger is connected to an internal power source of the CPU. The Anderson reference does not teach or suggest that the charger is connected to an internal power source of the CPU. Instead, the battery charger 103 is connected to a computer. Both are connected to each other via a databus. This means that only information about a charger or charging condition can be communicated between the charger and the CPU. Anderson does not teach or suggest that the charger is connected to the internal power source of the CPU so that the internal power source of the CPU is used as a power source of the charger.

Regarding claim 41, the Examiner has rejected claim 41 as being unpatentable over Fukuoka, et al. in combination with Kerai, et al. Applicant respectfully disagrees. The references fail to teach or suggest the use of a charging processing operation program and a display to show necessary information about a secondary cell to be charged, charging condition for charging a secondary cell and current charging condition. Thus, claim 41 is patentable over the cited art.

Applicant asserts that all pending claims are now allowable.

Respectfully submitted,

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What is claimed is:

1.   (Amended) A secondary cell charging apparatus which ~~uses a~~
~~computer apparatus as a part of construction elements of said~~
~~charging apparatus~~ comprises;

        a charger, which is either built into a personal computer
(hereinafter called as PC) or connected directly or indirectly
thereto, whereby an internal power supply source of said PC is
used as a power supply for said charger in a charging operation
for said secondary cell, and wherein said charger having built
into it a charging processing operation program required for
charging of said secondary cell whereby a charging operation is
performed by executing said charging processing operation program
selected for said secondary cell to be charged with utilizing an
electric power supplied from said internal power supply source
of said PC;

        a battery holding apparatus which holds at least a
secondary cell to be charged and connected directly or indirectly
to said charger;

        a display means connected to said PC and displaying at
least one information selected from a group consisting
information related to a secondary battery to be charged,
information related to conditions required for charging said
secondary cell to be charged and information related to past and
current charging situation or results of said charging operation;
and

        an input means connected to said PC and for inputting
information at least about said respective secondary cell to be

charged necessary to execute said charging processing operation program into a controller provided in PC.

2. (Cancelled)

3. (Previously Amended) A secondary cell charging apparatus according to claim 1, wherein said PC is selected from a group of a general-purpose PC including a desktop PC, a laptop PC, a mobile type PC, a dedicated game-use PC, and a TV PC with a bi-directional communication capability.

4. (Previously Amended) A secondary cell charging apparatus according to claim 1, wherein said charger is either a charging processing operation program required for a charging operation on a secondary cell or is an apparatus into which a charging processing operation program required for a charging operation to a secondary cell is built.

5. (Cancelled)

6. (Cancelled)

7. (Previously Amended) A secondary cell charging apparatus according to claim 1, wherein said PC is provided with a driving controlling program for driving a charging controlling program installed in said charger.

8. (Previously Amended) A secondary cell charging apparatus according to claim 1, wherein said apparatus configured so that by operating a controlling-condition-inputting means consisting of either a key-board or a mouse of a PC, at least one of information selected from a group of charging processing information, charging processing condition, information of a battery to be charged, situation of charging process proceeding,

charging history or the like is selected so as to make a control based upon the selected information and the result thereof being displayed on said display means of said PC.

9. (Previously Amended) A secondary cell charging apparatus according to claim 1, wherein said charging processing operation program is made separately based upon kinds of batteries, models thereof or applications thereof, respectively.

10. (Previously Amended) A secondary cell charging apparatus according to claim 1, wherein an apparatus that forms the charger which is selected from a group consisting of an international PCI (PC interface) standard selecting from either one of a PCI board or PCI card each including said charging processing operation program therein, an IC chip mounted on an expansion board or the like, a CD-ROM, a floppy disk, an IC card each including said charging processing operation program therein and a PC hard disk (HD) onto which said charging processing operation program has been installed.

11. (Previously Amended) A secondary cell charging apparatus according to claim 1, wherein said charger is connected detachably to any one of output terminals of said internal power supply circuit of said PC, and is further connected either directly or indirectly, by an appropriate connector and/or cable to said battery holding apparatus.

12. (Previously Amended) A secondary cell charging apparatus according to claim 1, wherein said charger is connected to said power supply circuit of said PC through an internationally standardized interface such as a PCI or a USB of said PC.

13.   (Previously Amended)   A secondary cell charging apparatus according to claim 1, wherein said battery holding apparatus is connected to said charger provided with a chip into which said charging processing operation program being installed therein and mounted on a board which is inserted into a board insertion slit of said PC, through an appropriate connector and/or cable.

14.   (Previously Amended)   A secondary cell charging apparatus according to claim 1, wherein in a case in which said charger is provided within said PC, said charger is connected to said internal power supply circuit of said PC, and is connected to said battery holding apparatus, either directly via a signal output of said PC, or indirectly connected thereto, via a signal output of said PC, utilizing an appropriate connector and/or cable.

15.   (Previously Amended)   A secondary cell charging apparatus according to claim 1, wherein in a case in which said charger is provided outside of said PC, said charger is connected to said internal power supply circuit of said PC through said board inserted into said board insertion slit or through said USB connector provided with said PC.

16.   (Currently Amended)   A secondary cell charging apparatus according to claim ~~12~~ 10, wherein said international PCI (PC interface) standard selecting from either one of a PCI board or PCI card, each including said charging processing operation program therein, an IC chip mounted on an expansion board or the like, a CD-ROM, a floppy disk, an IC card each including said charging processing operation program therein or a PC hard disk

(HD) onto which said charging processing operation program has been installed, is individually produced based upon kinds of batteries, model thereof, applications therefor, or the like, respectively.

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Currently Amended)   A secondary cell charging apparatus according to claim 20 1, wherein said secondary cell charging processing operation program executes high-speed charging processing.

22. (Original)   A secondary cell charging apparatus according claim 21, wherein said secondary cell charging processing operation program executes charging with a charging current of at least 2C.

23. (Original)   A secondary cell charging apparatus according to claim 10, wherein said charging processing operation program included in said charger is either built into said PC by inserting a floppy disk, a CD-ROM, or an IC card containing said charging processing operation program into a prescribed location of said PC, or by inserting a PCI board onto which an IC chip containing said charging processing operation program has been mounted into an expansion slot of said PC.

24. (Currently Amended)   A secondary cell charging apparatus according to claim 23 1, wherein wherein each of said charging processing operation program is created so as to have a

respective charging process operation condition of a secondary cell to be subjected to charging processing, being different from each other based upon at least one factor among a secondary cell manufacturer name, secondary cell type, model, construction, quantity, battery capacity, and internal resistance and the like .

25. (Currently Amended)   A secondary cell charging apparatus according to claim ~~24~~ 1, wherein said charging processing operation program has a function to distinguish at least one information selected from a group of information consisting a manufacturer name, secondary cell type, model, construction, quantity, battery capacity, and internal resistance and the like of a secondary cell requiring charging processing inserted in said battery holding apparatus.

26. (Currently Amended)   A secondary cell charging apparatus according to claim ~~25~~ 24, wherein said charger automatically selects a charging processing operation program having the most suitable charging processing condition to said secondary cell battery to be charged, among a plurality of charging processing operation program stored in said charger utilizing information about the secondary cell battery to be charged and distinguished by said PC, its-self or separate information about the secondary cell battery to be charged which is input into said PC by a user utilizing said inputting means.

27. (Currently Amended)   A secondary cell charging apparatus according to claim ~~26~~ 1, wherein information regarding a secondary cell requiring charging processing and inserted into said battery holding apparatus is displayed on a display means of

said PC.

28.   (Currently Amended)   A secondary cell charging apparatus according to claim ~~24~~ 1, wherein a user uses an appropriate input means associated with said PC to input information regarding a secondary cell requiring charging processing inserted in said battery holding apparatus, said information being displayed on a display means of said PC.

29.   (Currently Amended)   A secondary cell charging apparatus according to claim ~~26~~ 28, wherein when a user uses an appropriate input means associated with said PC to input information regarding a secondary cell requiring charging processing inserted in said battery holding apparatus and display said information on said display means of said PC in a case in which at least one information being different from information regarding a secondary cell requiring charging processing inserted in said battery holding apparatus is input, an alarm means is driven.

30.   (Currently Amended)   A secondary cell charging apparatus according to claim ~~24~~ 28, wherein a user, based on information regarding a secondary cell requiring charging processing, sets various conditions necessary to be required for charging said secondary cell by selecting same from a large number of alternatives displayed on a display screen of said PC.

31.   (Currently Amended)   A secondary cell charging apparatus according to claim ~~24~~ 1, wherein a predicted charging characteristics graph with regard to charging operation conditions for said selected secondary cell requiring charging processing can be displayed on said display means of said PC.

32.   (Currently Amended)   A secondary cell charging apparatus according to claim 31 1, wherein said predicted charging characteristics graph indicates a relationship between a battery voltage and a charging time or a relationship between a battery temperature and a charging time.

33.   (Currently Amended)   A secondary cell charging apparatus according to claim 24 1, wherein a display means of said PC displays at least one information selected from a manufacturer name, a battery type, battery capacity, charging rate, and internal resistance and the like with regard to charging operation conditions for said selected secondary cell requiring charging processing, and displays information in that whether it distinguishes the start of charging or charging in progress.

34.   (Currently Amended)   A secondary cell charging apparatus according to claim 24 33, wherein a display means of said PC displays at least one information selected from a manufacturer name, a battery type, battery capacity, charging rate, and internal resistance and the like with regard to charging operation conditions for said selected secondary cell requiring charging processing, and separately displays either one of the start of charging or charging in progress and wherein said display means displays either a separate display of a battery voltage and battery temperature, which vary with the elapse of processing time, or a graph indicating a relationship between a battery voltage and a charging time or a relationship between a battery temperature and a charging time.

35.   (Currently Amended)   A secondary cell charging apparatus

according to claim ~~34~~ 1, wherein a notification means is provided which, after a start of a prescribed charging processing operation under selected charging conditions with respect to a selected secondary cell requiring charging processing, in a case in which said charging operation is completed, makes notification to a user of said completion.

36. (Currently Amended)   A secondary cell charging apparatus according to claim ~~35~~ 1; wherein said charging processing operation program has separate settings of charging processing conditions for all secondary cell currently existing to be subjected to charging processing , respectively.

37. (Currently Amended)   A secondary cell charging apparatus according to claim ~~36~~ 1, wherein said charging processing operation program is created that is suitable for charging processing of a new secondary cell each time a new secondary cell is marketed, said program being added to an existing charging processing operation program by updating processing.

38. (Previously Amended)   A secondary cell charging apparatus according to claim 37, wherein any one of a PCI board or PCI card each forming said PCI interface, a floppy disk, a CD-ROM, or an IC card each of which containing said updated charging processing operation program is distributed to a user for a fee or free-of-charge, said user updating said charging processing operation program in his or her PC with said new charging processing operation program.

39. (Previously Amended)   A secondary cell charging apparatus according to claim 37, wherein said updated charging processing

operation program is distributed to a user via a communication system including such as the Internet.

40. (Original)   A secondary cell charging apparatus according to claim 39, wherein after a user, by means of a pre-established method, made a payment for said charging processing operation program for updating, said user downloads said charging processing operation program via the Internet, and updates said charging processing operation program in his or her PC with said new charging processing operation program.

41. (Currently Amended)   A charging system comprising:

a PC comprising an internal power supply circuit;

a charger using said internal power supply circuit of said PC as a power supply for said charger in a charging operation and which is provided with a built-in charging processing operation program ~~using said internal power supply circuit of said PC as a power supply in a charging operation~~ suitable for performing a charging operation for charging a respective secondary cell to be charged;

a display means connected to said PC and displaying at least one information selected from a group consisting information related to a secondary battery to be charged, information related to conditions required for charging said secondary cell to be charged and information related to past and current charging situation or results of said charging operation;

~~an input means connected to said PC;~~

a controller for causing said PC to drive; ~~and~~

a battery holding apparatus which holds at least a

secondary cell to be charged and connected to said charger;

an input means connected to said PC and for inputting information at least about said respective secondary cell to be charged necessary to execute said charging processing operation program into said controller of said PC; and

an external power supply means for driving said PC.

42.   (Original)   A charging system according to claim 41, further comprising a battery holding apparatus connected directly or indirectly to said charger, said battery holding apparatus includes either a holder part configured so as to enable acceptance and a charging processing operation separately on one or a plurality of secondary cell of various sizes requiring charging processing, or a stand part configured so as to enable acceptance and a charging processing operation of a plurality of secondary cell to be charged of the same size packaged within a prescribed pack, or directly of a cellular telephone with said pack built thereinto.

43.   (Original)   A charging system according to claim 42, wherein a charging processing operation program either built into said PC or stored in said charger externally connected to PC performs high-speed charging processing.

44.   (Original)   A charging system according to claim 43, wherein said secondary cell charging processing operation program executes charging with a charging current of at least 2C.

45.   (Previously Amended)   A charging system according to claim 43, wherein said charging processing operation program is built

into said PC by inserting a floppy disk, a CD-ROM, or an IC card each containing said charging processing operation program therein, into a prescribed location of said PC, or by inserting a PCI board onto which an IC chip or PCI card each containing said charging processing operation program has been mounted into an expansion slot of said PC.

46. (Previously Amended) A charging system according to claim 45, wherein said charger is connected detachably to any one of output terminals of said internal power supply circuit of said PC, and is further connected either directly or indirectly, by an appropriate connector and/or cable to said battery holding apparatus.

47. (Previously Amended) A charging system according to claim 46, wherein said charger is connected to said power supply circuit of said PC through an internationally standardized interface such as a PCI or a USB of said PC.

48. (Original). A charging system according to claim 45, wherein each of said charging processing operation program has mutually different charging processing conditions from each other as set for at least one factor among a secondary cell manufacturer name, secondary cell type, model, construction, quantity, battery capacity, and internal resistance and the like of a secondary cell to be subjected to charging processing.

49. (Previously Amended) A charging system according to claim 48, wherein said charging processing operation program has a function to distinguish at least one information selected from a group of information consisting of a manufacturer name,

secondary cell type, model, construction, quantity, battery capacity, and internal resistance and the like of a secondary cell requiring charging processing inserted in said battery holding apparatus , and further wherein said program having a function in that said distinguished information about said secondary cell battery is displayed on said display means.

50. (Previously Amended) A charging system according to claim 49, wherein said input means is used to display on said display means information regarding a secondary cell requiring charging processing inserted into said battery holding apparatus.

51. (Previously Amended) A charging system according to claim 50, wherein a user, based on information regarding a secondary cell requiring charging processing, sets various conditions necessary to be required for charging said secondary cell by selecting same from a large number of alternatives displayed on a display screen of said PC.

52. (Previously Amended) A charging system according to claim 51, wherein, from information regarding said secondary cell requiring charging processing recognized by said PC, or from information regarding said secondary cell requiring charging processing input by a user via said input means, a charging processing operation program having charging processing conditions most suited for said secondary cell required charging processing is selected from a plurality of charging processing operation programs stored within said charger.

53. (Currently Amended) A charging system according to claim ~~49~~ 52, wherein either various information regarding optimum

charging operation conditions for a selected secondary cell requiring charging processing or a predicted charging characteristics graph with regard to charging operation conditions for said selected secondary cell requiring charging processing can be displayed on said display means of said PC.

54. (Original) A charging system according to claim 53, wherein said predicted charging characteristics graph indicates a relationship between a battery voltage and a charging time or a relationship between a battery temperature and a charging time.

55. (Previously Amended) A charging system according to claim 54, wherein a display means of said PC displays a battery type, battery capacity, charging rate, and internal resistance and the like with regard to charging operation conditions for said selected secondary cell requiring charging processing, and displays whether it distinguishes the start of charging or charging in progress, and further displays during said charging operation on said secondary cell either a separate display of a battery voltage and battery temperature, which vary with the elapse of processing time, or a graph indicating a relationship between a battery voltage and a charging time or a relationship between a battery temperature and a charging time.

56. (Previously Amended) A charging system according to claim 55, wherein a notification means is provided which, after a start of a prescribed charging processing operation under selected charging conditions with respect to a selected secondary cell requiring charging processing, in a case in which said charging operation is completed, makes notification to a user of said

completion.

57. (Previously Amended) A charging system according to claim 56, wherein said charging processing operation program has a separate settings of charging processing conditions for all secondary cell currently existing to be subjected to charging processing , respectively.

58. (Previously Amended) A charging system according to claim 57, wherein said charging processing operation program is created that is suitable for charging processing of a new secondary cell each time a new secondary cell is marketed, said program being added to an existing charging processing operation program by updating processing.

59. (Previously Amended) A charging system according to claim 58, wherein any one of a PCI board or PCI card each forming said PCI interface, a floppy disk, a CD-ROM, or an IC card each of which containing said updated charging processing operation program is distributed to a user for a fee or free-of-charge, said user updating said charging processing operation program in his or her PC with said new charging processing operation program.

60. (Previously Amended) A charging system according to claim 58, wherein said updated charging processing operation program is distributed to a user via a communication system such as the Internet.

61. (Previously Amended) A charging system according to claim 60, wherein after a user, by means of a pre-established method, made a payment for said charging processing operation program for updating, said user downloads said charging processing operation

program via the Internet, and updates said charging processing operation program in his or her PC with said new charging processing operation program.

62. (Currently Amended) A secondary cell charging method wherein a charger to which is connected either a holder part configured so as to enable acceptance and a charging processing operation separately on one or a plurality of secondary cells of various sizes requiring charging processing, or a stand part configured so as to enable acceptance and a charging processing operation of a cell package in that a plurality of secondary cell of the same size packaged within a prescribed pack, or directly of a cellular telephone with said pack built thereinto, is either built into a PC or connected externally thereto, whereby an internal power supply circuit of the PC is used as a power supply for said charger in a charging operation, and wherein said charger connected to said internal power supply circuit of said PC having built into it a charging processing operation program required for charging of said secondary cell whereby a charging operation is performed by executing said charging processing operation program selected for said secondary cell to be charged with utilizing an electric power supplied from said internal power supply circuit of said PC, while displaying at least either one of information related to said secondary cell to be charged or information related to said charging condition of said charging operation as being carried out on a display means connected to said PC.

63. (Original) A secondary cell charging method according to

claim 62, wherein said charger connected to said internal power supply circuit of said PC is connected to a signal output terminal of said PC or is connected to said signal output terminal being either directly or indirectly, via an appropriate connector and/or cable, so that a charging processing operation on a secondary cell is performed.

64. (Currently Amended) A secondary cell charging method according to claim 63 62, wherein either the secondary cell holder part or stand part is formed so as to match the dimensions or shape of each individual secondary cell.

65. (cancelled)

66. (Currently Amended) A secondary cell charging method according to claim 65 62, wherein said charger performs control of current from an internal power supply circuit of said PC in accordance with said charging processing operation program, so as to execute charging processing with respect to a secondary cell requiring charging processing.

67. (Currently Amended) A secondary cell charging method according to claim 66 62, wherein said secondary cell charging processing operation program executes high-speed charging processing.

68. (Original) A secondary cell charging method according to claim 67, wherein said high-speed charging processing is executed with a charging current of at least 2C.

69. (Currently Amended) A secondary cell charging method according to claim 66 62, wherein said charging processing operation program included in said charger is either built into

said PC by inserting a floppy disk, a CD-ROM, or an IC card containing said charging processing operation program into a prescribed location of said PC, or by inserting a PCI board or expansion board including an IC chip and PCI card therein each of which containing said charging processing operation program therein has been mounted into an expansion slot of said PC.

70. (Currently Amended) A secondary cell charging method according to claim 53 62, wherein said charging processing operation program has mutually different charging processing conditions from each other as set for at least one factor among a secondary cell manufacturer name, secondary cell type, model, construction, quantity, battery capacity, and internal resistance and the like of a secondary cell to be subjected to charging processing.

71. (Currently Amended) A secondary cell charging method according to claim 70 62, wherein said charging processing operation program distinguishes at least one part of a manufacturer name, secondary cell type, model, construction, quantity, battery capacity, and internal resistance and the like of a secondary cell requiring charging processing and also displays said information on a display means of said PC.

72. (Currently Amended) A secondary cell charging method according to claim 71 62, wherein user uses an appropriate input means associated with said PC to input information regarding a secondary cell requiring charging processing and inserted in said holder part or said stand, said information

being displayed ona display means of said PC.

73. (Currently Amended)   A secondary cell charging method according to claim ~~72~~ 62, wherein a user, based on information regarding a secondary cell requiring charging processing sets various conditions necessary to be required for charging said secondary cell by selecting same from a large number of alternatives displayed on a display screen of said PC.

74. (Currently Amended)   A secondary cell charging method according to claim ~~70~~ 62, wherein in said PC, from information regarding said secondary cell requiring charging processing recognized by said PC, or from information regarding said secondary cell requiring charging processing input by a user via said input means, a charging processing operation program having charging processing conditions most suited for said secondary cell required charging processing is selected from a plurality of charging processing operation programs stored within said charger, and displayed on said display means.

75. (Currently Amended)   A secondary cell charging method according to claim ~~74~~ 62, wherein a predicted charging characteristics graph with regard to charging operation conditions for said selected secondary cell requiring charging processing is displayed on said display means of said PC.

76. (Previously Amended)   A secondary cell charging method according to claim 75, wherein said predicted charging characteristics graph indicates a relationship between a battery voltage and a charging time or a relationship between a battery temperature and a charging time.

77. (Currently Amended)   A secondary cell charging method according to claim ~~76~~ 62, wherein a display means of said PC displays at least one of a name of a battery manufacturer, a kind of battery, a battery type, battery capacity, quantity thereof, a capacitance thereof, charging rate, a charging power supply and internal resistance and the like with regard to charging operation conditions for said selected secondary cell requiring charging processing, and a display that distinguishes between the start of charging and charging in progress, and further displays during said charging operation on said secondary cell either a separate display of a battery voltage and battery temperature, which vary with the elapse of processing time, or displays a graph indicating a relationship between a battery voltage and a charging time or a relationship between a battery temperature and a charging time.

78. (Currently Amended)   A secondary cell charging method according to claim ~~77~~ 62, wherein a notification means is provided which, after a start of a prescribed charging processing operation under selected charging conditions with respect to a selected secondary cell requiring charging processing, in a case in which said charging operation is completed, makes notification to a user of said completion.

79. (Currently Amended)   A secondary cell charging method according to claim ~~78~~ 70, wherein said charging processing operation program has a separate settings of charging processing conditions for all secondary cell currently existing to be subjected to charging processing, respectively.

80. (Currently Amended) A secondary cell charging method according to claim ~~79~~ 70, wherein said charging processing operation program is created that is suitable for charging processing of a new secondary cell each time a new secondary cell is marketed, said program being added to an existing charging processing operation program by updating processing.

81. (Currently Amended) A secondary cell charging method according to claim ~~80~~ 70, wherein any one of a PCI board or PCI card each forming said PCI interface, a floppy disk, a CD-ROM, or an IC card each of which containing said updated charging processing operation program is distributed to a user for a fee or free-of-charge, said user updating said charging processing operation program in is or her PC with said new charging processing operation program.

82. (Currently Amended) A secondary cell charging method according to claim ~~80~~ 70, wherein said updated charging processing operation program is distributed to a user via a communication system such as the Internet.

83. (Currently Amended) A secondary cell charging method according to claim ~~82~~ 70, wherein after a user, by means of a pre-established method, makes a payment for said charging processing operation program for updating, said user downloads said charging processing operation program via the Internet, and updates said charging processing operation program in his or her PC with said new charging processing operation program.

84. (Currently Amended) A secondary cell charging method according to claim ~~83~~ 62, wherein past charging processing

information with respect to each individual secondary cell is stored as historical information.

85. (Currently Amended) A secondary cell charging method according to claim 88 66, wherein a storage means is provided for each individual secondary cell, and wherein past charging processing information for each individual secondary cell is stored in said storage means as historical information.

86. (Currently Amended) A method for charging a secondary cell in a charging system comprising a PC with an internal power supply circuit, a charger, including a charging processing operation program using said internal power supply circuit of said PC as a power supply in performing a charging operation, a display means connected to said PC, an input means connected to said PC, an input means connected to said PC, a controller for causing said PC including said charger, to drive, an external power supply means for driving said PC, and a battery holding apparatus connected to said charger for holding a secondary cell, said secondary cell charging method comprising:

a battery list generation step of analyzing at least one a part of a name of battery manufacturer, a kind of a battery, a battery type, model, ratings, capacity, output voltage, charging/discharging characteristics, and internal resistance and the like of all currently existing chargeable secondary cells, establishing optimum charging processing operation conditions for each said individual secondary cell, and generating a list thereof;

a step of storing said battery list into a

prescribed storage means of said PC;

a step of starting software, including said <u>selected</u> charging processing operation program;

a step of inserting a secondary cell requiring charging processing into a holding means of said ~~charger~~ <u>battery</u>;

a step of said charging processing operation program distinguishing information with regard to said secondary cell requiring a charging operation inserted in said charger, selecting from said battery list a charging processing operation program suitable for a charging operation of said secondary cell, and of displaying said selected charging processing operation program on said display means, together with a charging graph or other battery information;

a step of inputting a number of secondary cells to be charged simultaneously;

a step of verifying charging conditions on a screen of said display means, and then starting a charging operation;

a step during a charging processing operation of either causing drive of an alarm means, which makes notification that a charging processing operation is in progress, or causing a dynamic display of a charging graph on said display means; and

a step, in a case in which said charging processing operation on said secondary cell is completed, of performing a display indicating that said charging processing operation has been completed.

87. (Currently Amended) A method for charging a secondary cell in

a charging system comprising a PC with an internal power supply circuit, a charger, including a charging processing operation program using said internal power supply circuit of said PC as a power supply in performing a charging operation, a display means connected to said PC, an input means connected to said PC, a controller for causing said PC to drive, an external power supply means for driving said PC, and a battery holding apparatus connected to said charger for holding a secondary cell, said secondary cell charging method comprising:

a battery list generation step of analyzing at least a part of a battery manufacturer, a battery type, model, ratings, capacity, output voltage, charging/discharging characteristics, and internal resistance and the like of all currently existing chargeable secondary cells, respectively, establishing optimum charging processing operation conditions for each individual secondary cell, respectively, and generating a list thereof;

a step of storing said battery list into a prescribed storage means of said PC;

a step of starting software, including said selected charging processing operation program;

a step of inserting a secondary cell requiring charging processing into said holding apparatus connected to said charger;

a step of, in accordance with information with regard to a secondary cell requiring charging processing, selecting a charging processing operation program suitable for a

secondary cell requiring a charging processing operation from said battery list;

a step of displaying a charging graph;

a step of inputting a number of secondary cells to be charged simultaneously;

a step of verifying charging conditions on a screen of the display means, and then starting a charging operation;

a step during a charging processing operation of either causing drive of an alarm means, which makes notification that a charging processing operation is in progress, or causing a dynamic display of a charging graph on said display means; and

a step in a case in which said charging processing operation on said secondary cell is completed of performing a display indicating that said charging processing operation has been completed.

88. (Currently Amended) A secondary cell charging method in a charging system comprising a PC with an internal power supply circuit, a charger, including a charging processing operation program using said internal power supply circuit of said PC as a power supply in performing a charging operation, a display means connected to said PC, an input means connected to said PC, a controller for causing said PC to drive, and an external power supply means for driving said PC, said secondary cell charging method comprising:

a battery list generation step of analyzing at least one of a battery manufacturer name, battery type, model, ratings, capacity, output voltage, charging/discharging characteristics,

and internal resistance and the like of each one of all currently existing chargeable secondary cells, establishing optimum charging processing operation conditions for each individual secondary cell, respectively, and generating a list thereof;

a step of storing said battery list into a prescribed storage means of said PC;

a step of starting software, including said selected charging processing operation program;

a step of inserting a secondary cell requiring charging processing into said a holding apparatus of said charger;

a step of a user using said input means to input separately to said PC at least a part of a battery manufacturer name, battery type, battery voltage, battery capacity, charging rate, and internal resistance and the like for a secondary cell requiring charging processing;

a step of said PC selecting from said battery list, based on said input information, a charging processing operation program suitable for said secondary cell requiring a charging processing operation;

a step of displaying a charging graph;

a step of inputting a number of secondary cells to be charged simultaneously;

a step of verifying charging conditions on a screen of said display means, and then starting a charging operation;

a step during a charging processing operation of

either causing drive of an alarm means, which makes notification that a charging processing operation is in progress, or causing a dynamic display of a charging graph on said display means; and

a step in a case in which said charging processing operation on said secondary cell is completed of performing a display indicating that said charging processing operation has been completed.

89. (Currently Amended)   A charging method according to claim 88 62, wherein a provider of said charging rocessing operation program discloses optimum charging processing conditions or a charging processing operation program for a prescribed secondary cell on a web page via the Internet, so that any user can access said provider of said charging processing operation program and receive distribution of said charging processing operation program via said Internet.

90. (Currently Amended)   A method for charging according to claim 88 62, wherein a provider of said charging processing operation program discloses optimum charging processing conditions or a charging processing operation program for a prescribed secondary cell on a web page via the Internet, and wherein a user executes placement of an order and remittance of payment therefor via said Internet, whereupon a floppy disk, CD-ROM, IC card, or expansion board onto which is installed an IC chip containing said charging processing operation program required for execution thereof is sent to said user.

91. (Currently Amended)   A charging method according to claim 88 62, wherein a provider of said charging processing operation

program discloses optimum charging processing conditions or a charging processing operation program for a prescribed secondary cell on a web page via the Internet that is at all times the latest optimum charging processing conditions or the latest charging processing operation program, so that a user can execute placement of an order and remittance of payment therefor via the Internet, enabling said user to download said latest charging processing conditions or said latest charging processing operation program to his or her PC, thereby maintaining a latest charging processing operation environment on his or her PC.

92. (Previously Amended)   A storage medium onto which is stored a program for the purpose of causing a computer to execute a charging method recited in claim 86.

93.   (Currently Amended)   A secondary cell charging apparatus according to claim 2, wherein ~~said~~ a charger which can be connectable directly or indirectly to an internal power source of a PC detachably and selected from a group consisting of an international PCI (PC interface) standard selecting from either one of a PCI board or PCI card each including said charging processing operation program therein, an IC chip mounted on an expansion board or the like, a CD-ROM, a floppy disk, an IC card each including said charging processing operation program therein and a PC hard disk (HD) onto which said charging processing operation program has been installed, is formed a kit with a predetermined battery holder means with a connecting cable or a wire for connecting said holder means to said battery charger and a predetermined operation manual of said charger so as to be sold

publicly.

94.   (Original)   A secondary cell charging apparatus according to claim 93, wherein said kit is individually formed based upon an application to which said secondary cell battery to be charged being used, respectively.

95. (Currently Amended)   A secondary cell charging system which comprising the steps of;

creating a charging processing operation program used for each one of various kinds of secondary cell batteries to be charged, respectively;

storing said charging processing operation program created for each one of various kinds of secondary cell batteries to be charged, respectively, into a predetermined memory medium;

opening said charging processing operation program to the public through an

communication net works or by printing out same on a hard storing medium;

~~preparing~~ providing said charging processing operation program suitable for an user's

intention, when said user having a PC had accessed to this system;

asking said user to pay a predetermined necessary expenses through a predetermined payment system by a business entity providing said system to the public;

providing said charging processing operation program to said user by distributing system or through said communication net works, when said business entity

had confirmed that said user had said predetermined expenses through said predetermined payment system;

installing or down loading said charging processing operation program by said user into a PC owned by said user;

performing charging processing operation for a predetermined secondary cell

battery by said user utilizing said charging processing operation program; and

updating said charging processing operation program by said user with a new

version of said charging processing operation program which would arbitrarily be down-loaded by said user.

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